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Clmspto-04/12/02

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03/16/05

Original claims 1-2.

1. A gene encoding cyclic lipopeptide acylase, which comprises the entirety or a part of the following (a), (b) or (c):

- (a) a DNA consisting of the nucleotide sequence depicted in SEQ ID No. 1
- (b) a DNA capable of hybridizing with the DNA of the above-mentioned (a) under stringent conditions
- (c) a DNA having at least (1) 60% identity, (2) 70% identity, (3) 80% identity, (4) 90% identity or (5) 95% identity with the nucleotide sequence depicted in SEQ ID No. 1.

2. A gene encoding a protein of the following (a) or (b) or a part thereof:

- (a) a protein consisting of the amino acid sequence depicted in SEQ ID No. 2
- (b) a protein having an amino acid sequence involving deletion, substitution or addition of one to several amino acid(s) in the amino acid sequence (a), which protein has a cyclic lipopeptide acylase activity.

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3. (Amended) A recombinant vector comprising the gene of claim 1.
4. (Amended) An expression vector functionally comprising the gene of claim 1.
5. (Amended) A transformant obtained by transforming a host cell with the vector of claim 3.

Original claims 6-9.

6. A method of producing cyclic lipopeptide acylase, which comprises  
culturing a host cell transformed with the expression  
vector of claim 4, and  
harvesting, from the obtained culture, cyclic lipopeptide

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acylase capable of catalyzing a reaction to deacylate a side chain acylamino group of a cyclic lipopeptide substance into an amino group.

7. A cyclic lipopeptide acylase produced by the production method of claim 6.

8. A gene encoding cyclic lipopeptide acylase, which comprises the entirety or a part of the following (a), (b) or (c):

- (a) a DNA consisting of a nucleotide sequence shown by nucleotide No. 1065 to 3359 in the nucleotide sequence depicted in SEQ ID No. 1
- (b) a DNA capable of hybridizing with the DNA of the above-mentioned (a) under stringent conditions
- (c) a DNA having at least (1) 60% identity, (2) 70% identity, (3) 80% identity, (4) 90% identity or (5) 95% identity with the nucleotide sequence shown by nucleotide No. 1065 to 3359 in the nucleotide sequence depicted in SEQ ID No. 1.

9. A gene encoding a protein of the following (a) or (b):

- (a) a protein consisting of amino acid number from -1 or 1 to 765 in the amino acid sequence depicted in SEQ ID No. 2
- (b) a protein having an amino acid sequence involving deletion, substitution or addition of one to several amino acid(s) in the amino acid sequence (a), which protein has a cyclic lipopeptide acylase activity.

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10. (Amended) A recombinant vector comprising the gene of claim 8.
11. (Amended) An expression vector functionally comprising the gene of claim 8.
12. (Amended) A transformant obtained by transforming a host cell with a vector of claim 10.

Original claims 13-20.

13. A method of producing cyclic lipopeptide acylase, which comprises

culturing a host cell transformed with the expression vector of claim 11, and  
harvesting, from the obtained culture, cyclic lipopeptide acylase capable of catalyzing a reaction to deacylate a side chain acylamino group of a cyclic lipopeptide substance into an amino group.

14. A cyclic lipopeptide acylase produced by the production method of claim 13.

15. A cyclic lipopeptide acylase encoded by a DNA consisting of a nucleotide sequence shown by nucleotide No. 1065 to 3359 in the nucleotide sequence depicted in SEQ ID No. 1.

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16. A cyclic lipopeptide acylase which is encoded by a DNA having at least (1) 60% identity, (2) 70% identity, (3) 80% identity, (4) 90% identity or (5) 95% identity with the nucleotide sequence shown by nucleotide No. 1065 to 3359 in the nucleotide sequence depicted in SEQ ID No. 1.

17. A protein of the following (a) or (b):

- (a) a protein consisting of amino acid No. -1 to 200 in the amino acid sequence depicted in SEQ ID No. 2
- (b) a protein having an amino acid sequence involving deletion, substitution or addition of one to several amino acid(s) in the amino acid sequence (a), which protein forms a complex with the protein of the following (c) or (d) to show a cyclic lipopeptide acylase activity:

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- (c) a protein consisting of amino acid No. 201 to 765 in the amino acid sequence depicted in SEQ ID No. 2
  - (d) a protein having an amino acid sequence involving deletion, substitution or addition of one to several amino acid(s) in the amino acid sequence (c), which protein forms a complex with the polypeptide of the above-mentioned (a) or (b) to show a cyclic lipopeptide acylase activity.
18. A protein of the following (c) or (d):
- (c) a protein consisting of amino acid No. 201 to 765 in the amino acid sequence depicted in SEQ ID No. 2
  - (d) a protein having an amino acid sequence involving deletion, substitution or addition of one to several amino acid(s) in the amino acid sequence (c), which protein forms a complex with the protein of (a) or (b) below to show a cyclic lipopeptide acylase activity:
    - (a) a protein consisting of amino acid number from -1 or 1 to 200 in the amino acid sequence depicted in SEQ ID No. 2
    - (b) a protein having an amino acid sequence involving deletion, substitution or addition of one to several amino acid(s) in the amino acid sequence (a), which protein forms a complex with the protein of the above-mentioned (c) or (d) to show a cyclic lipopeptide acylase activity.
19. A DNA encoding the protein of claim 17.
20. A DNA encoding the protein of claim 18.

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21. (Amended) A recombinant vector comprising the DNA of claim 19.

22. (Amended) An expression vector comprising the DNA of claim 19.

23. (Amended) A transformant obtained by transforming a host cell with the vector of claim 21.

Original claims 24-25.

24. A method of producing cyclic lipopeptide acylase, which comprises

culturing a host cell transformed with the expression vector of claim 22, and  
harvesting, from the obtained culture, cyclic lipopeptide acylase capable of catalyzing a reaction to deacylate a side chain acylamino group of a cyclic lipopeptide substance into an amino group.

25. A cyclic lipopeptide acylase produced by the production method of claim 24.

26. (Amended) A method for deacylating a side chain acylamino group of a cyclic lipopeptide substance into an amino group, which method comprises culturing a host cell transformed with the expression vector of claim 4, and bringing the cyclic lipopeptide substance into contact with the obtained culture or a treated product thereof.

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27. (New) A recombinant vector comprising the gene of claim 2.
28. (New) An expression vector functionally comprising the gene of claim 2.
29. (New) A transformant obtained by transforming a host cell with the vector of claim 4.
30. (New) A transformant obtained by transforming a host cell with the vector of claim 27.
31. (New) A transformant obtained by transforming a host cell with the vector of claim 28.
32. (New) A method of producing cyclic lipopeptide acylase, which comprises culturing a host cell transformed with the expression vector of claim 28, and harvesting, from the obtained culture, cyclic lipopeptide acylase capable of catalyzing a reaction to deacylate a side chain acylamino group of a cyclic lipopeptide substance into an amino group.



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33. (New) A cyclic lipopeptide acylase produced by the production method of claim 32.

34. (New) A recombinant vector comprising the gene of claim 9.

35. (New) An expression vector functionally comprising the gene of claim 9.

36. (New) A transformant obtained by transforming a host cell with a vector of claim 34.

37. (New) A transformant obtained by transforming a host cell with a vector of claim 35.

38. (New) A method of producing cyclic lipopeptide acylase, which comprises culturing a host cell transformed with the expression vector of claim 35, and harvesting, from the obtained culture, cyclic lipopeptide acylase capable of catalyzing a reaction to deacylate a side chain acylamino group of a cyclic lipopeptide substance into an amino group.

39. (New) A cyclic lipopeptide acylase produced by the production method of claim 38.

40. (New) A recombinant vector comprising the DNA of claim 20.

41. (New) An expression vector comprising the DNA of claim 20.

42. (New) A transformant obtained by transforming a host cell with the vector of claim 40.

43. (New) A transformant obtained by transforming a host cell with the vector of claim 41.

44. (New) A method of producing cyclic lipopeptide acylase, which comprises, culturing a host cell transformed with the expression vector of claim 41, and harvesting, from the obtained culture, cyclic lipopeptide acylase capable of catalyzing a reaction to deacylate a side chain acylamino group of a cyclic lipopeptide substance into an amino group.

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45. (New) A cyclic lipopeptide acylase produced by the production method of claim

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46. (New) A method for deacylating a side chain acylamino group of a cyclic lipopeptide substance into an amino group, which method comprising culturing a host cell transformed with the expression vector of claim 11 and bringing the cyclic lipopeptide substance into contact with the obtained culture or a treated product thereof.

47. (New) A method for deacylating a side chain acylamino group of a cyclic lipopeptide substance into an amino group, which method comprising culturing a host cell transformed with the expression vector of claim 35 and bringing the cyclic lipopeptide substance into contact with the obtained culture or a treated product thereof.

48. (New) A method for deacylating a side chain acylamino group of a cyclic lipopeptide substance into an amino group, which method comprising culturing a host cell transformed with the expression vector of claim 22 and bringing the cyclic lipopeptide substance into contact with the obtained culture or a treated product thereof.

49. (New) A method for deacylating a side chain acylamino group of a cyclic lipopeptide substance into an amino group, which method comprising culturing a host cell transformed with the expression vector of claim 41 and bringing the cyclic lipopeptide substance into contact with the obtained culture or a treated product thereof.